

# A SiC-based Microcontroller for High-Temperature In-Situ Instruments and Systems, Phase I

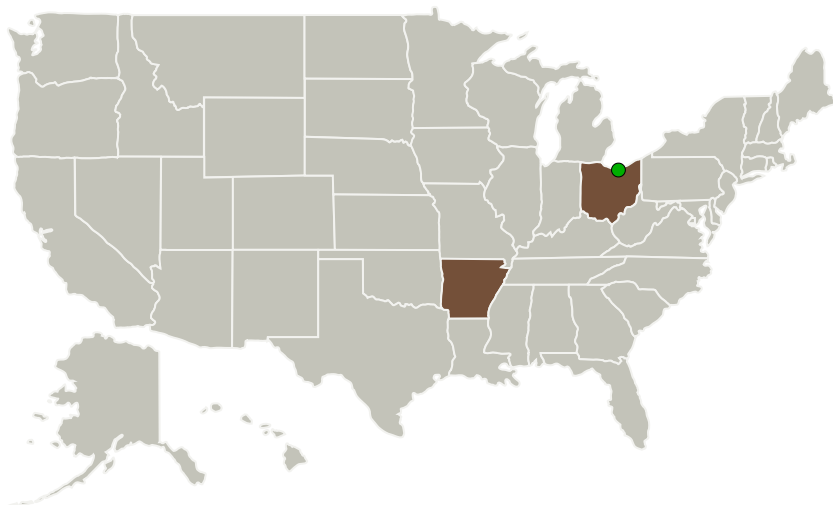
Completed Technology Project (2015 - 2015)



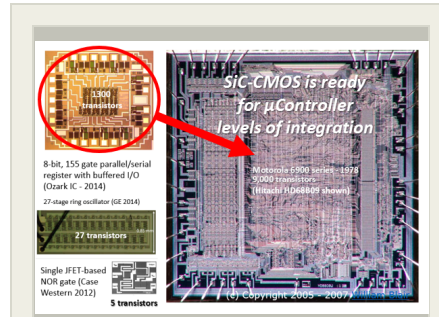
## Project Introduction

NASA has a need for electronics that can support proposed flagship missions such as a Venus surface lander. Devices that can operate at temperatures of up to 500°C are desired. Ozark IC and its partner, the University of Arkansas, have created the world's largest known library of CMOS silicon-carbide (SiC) analog and mixed-signal circuits, intellectual property (IP) and packages that can operate at very high temperatures. The key next component is a general-purpose SiC microcontroller to provide real-time programmability for these SiC support circuits. This Phase I proposal will use the extensive Ozark IC SiC library to develop a self-contained general-purpose SiC-CMOS microcontroller. When combined with data converters, gate drivers and other analog/mixed-signal circuitry, this microcontroller could serve in any number of high-temperature sample acquirement and analysis instruments.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Ozark Integrated Circuits, Inc.	Lead Organization	Industry	Fayetteville, Arkansas
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio



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## Primary U.S. Work Locations

Arkansas

Ohio

## Project Transitions



**June 2015:** Project Start



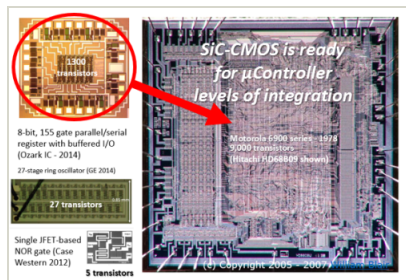
**December 2015:** Closed out

**Closeout Summary:** A SiC-based Microcontroller for High-Temperature In-Situ Instruments and Systems, Phase I Project Image

### Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/138760>)

## Images



### Briefing Chart Image

A SiC-based Microcontroller for High-Temperature In-Situ Instruments and Systems, Phase I (<https://techport.nasa.gov/image/133210>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Ozark Integrated Circuits, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

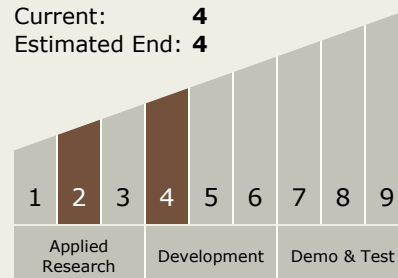
Carlos Torrez

### Principal Investigator:

Anthony M Francis

## Technology Maturity (TRL)

Start: 2  
Current: 4  
Estimated End: 4



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.3 In-Situ Instruments and Sensors
    - └ TX08.3.4 Environment Sensors

## Target Destinations

Earth, The Moon, Others Inside the Solar System, Outside the Solar System, The Sun, Mars